the making of new oyster-beds, legislation is necessary, in order that citizens may spend the money necessary to prepare and sow them, and that they may feel sure that their investment shall be protected from theft. As to protection from theft, I am informed, on what I believe to be good authority, that a private oyster-bed, made in accordance with full provisions of the law, was robbed of 340,000 bushels of oysters last season, with no effective interference from the oyster navy.

This navy, what is it? and our laws, what are they?

Let me tell you a short story, but a true one, — a story of an oyster-steamer with some scientific students on board. On every side dredgers were violating the law. About dark each day the captain felt sufficiently braced up to make an arrest: he made for the nearest oyster-sloop, quite sure that it was breaking the law; and, as every oyster-sloop does violate the law, the captain was safe in going for the nearest. The commander of the pirate was arrested and taken before a justice of the peace, who had his office near the place of arrest. The magistrate, more likely than not a shareholder in the oyster-stealing sloop, was asked to wait until the accused person could bring his witnesses. The outraged captain answered that he could not waste the time of his scientific friends, and he therefore withdrew the charge, that they might not suffer; and this sort of thing went on day after day.

Is not this oyster navy, on the whole, a fraud, or perhaps rather a sham, — the scoff of the oyster thieves and the scorn of the whole State? Perhaps not so bad as it used to be, but even now a public scandal.

Some friends wish the university to undertake the breeding of oysters. That is purely a commercial matter, and should be done by business-men. The engagement of the proper man as manager, the hiring of laborers, the purchase of machinery, — all that is a business matter, and not university work at all.

They say, "We want to get the oyster out of politics." The university cannot take it out, though the oyster might get the university into politics, which may a merciful Providence forever forefend! You cannot get the oyster out of politics, and it would not be right to do it if you could. As oyster-catching is a chief industry of the State, the oyster question must always be a political question. The one thing necessary is to make our politicians as good as our oysters.

The fact remains that the Maryland oyster is becoming extinct. To preserve it, to maintain our heritage, needs some little honest and intelligent legislation, needs some active, instructed, and well-meaning control. Will you see to it?

RECENT ADVANCES IN MEDICINE.[1]

EMANCIPATED from the thraldom of authority in which it was fast bound for centuries, medicine has progressed with extraordinary rapidity, and even within the present generation has undergone a complete revolution. The advance has been in three directions: first, in the prevention of disease. A study of the conditions under which epidemics develop has led to the important work of sanitary science. For fifty years the watchword of the profession in this matter has been cleanliness; and clean streets, good drains, and pure water have in many towns reduced the mortality from certain diseases fifty per cent. In this department certainly medicine has achieved its greatest victories. It is a thought full of encouragement to know that such diseases as typhoid-fever and diphtheria may ultimately be stamped out, and be as rare among us as leprosy and small-pox. In this work the profession requires, and can often obtain, the intelligent co-operation of city authorities and the public. People scarcely understand how much has already been done, nor do they yet fully appreciate the possibilities of preventive medicine.

The second great advance which medicine has made relates to the knowledge which has been gained of the agents producing diseases. Dating from the studies on fermentation by Pasteur, and the early work of Lister, we have gradually learned to recognize the importance of the structures known as bacteria, which has revolutionized the practice of surgery and gynecology. To-day surgery is a new art, and hundreds now recover after operations from which hundreds previously died. The information which we now have on these subjects has been slowly and painfully acquired, here a little and there a little; but the outcome of it all is that as clean streets and good drains and pure water mean municipal health, so absolute cleanliness and absence of contamination mean in great part freedom from infection. So universally present are the infective agents, particularly of suppuration, that it is only by the most scrupulous care that the infection of wounds can be prevented; and it is now generally acknowledged that the highest type of this antisepticism is obtained, not by the use of various solutions which destroy the germs, but by such measures of cleanliness as effectually prevent the possibility of their presence. Now, the point for the public to appreciate in this whole question is that they are reaping the benefit of advances rendered possible by work done in laboratories without a thought of its application to life-saving.

The researches showing the relation of special microscopic organisms to special diseases are likely to lead to the most important results. The cultivation of the germs of disease outside of the body has enabled us to study the products of their growth, and in several instances from them to obtain materials which, when injected into an animal, act as a sort of vaccine against the disease itself. The hope of obtaining in some of the most important diseases vaccines which will bear the same relation to them as ordinary vaccine to small-pox is very reasonable, and likely ere long to be realized. In another direction, too, the recent studies of Koch have shown that in the growth of these bacilli materials are obtained which may act most powerfully upon the body, and attack the elements of the disease itself. His discovery of the action of the product of the growth of the tubercle bacilli upon tuberculous tissue ranks as one of the most remarkable of late years. His claims that this will cure early tuberculosis and lupus will, I believe, be substantiated. Great as is this fact in itself, the possibilities which it opens up to our view are still greater, and it may be safely said, that, apart altogether from the action of the lymph, no more encouraging discovery has been made in the past twenty-five years.

But I hear the householder say, "All that is very well; but Tommy gets the measles, and Mary has the mumps, and Susie gets the whooping-cough, just as my grandmother tells me her children had fifty years ago. My doctor's bills are possibly a little larger than were father's, and I know his drug bill could not have been as heavy as was mine for the last quarter." This may be perfectly true, for the millennium has not yet come; but it is perfectly true that to-day Mrs. Householder's risks have been reduced to a minimum in the necessary domestic emergencies, and her children's chances of reaching maturity have been enormously enhanced.

The third great advance has been the diffusion in the profession and among the public of the more rational ideas upon the treatment of disease. Dieting and nursing have supplanted in great part bleeding and physicking. We know now that a majority of febrile affections run a definite course, uninfluenced by drugs. We recognize daily the great fact that disease is only a modification of the normal processes of health, and that there is a natural tendency to recover. We cannot claim in the medicinal treatment of disease to have made great positive advances; still, to have learned not to do what we did is for the poor patients a great gain. The past half-century has placed only half a dozen absolutely indispensable drugs which must be used by all indiscriminately who practise the healing art.

A desire to take medicine is, perhaps, the great feature which distinguishes man from other animals. Why this appetite should have developed, how it could have grown to its present dimensions, what it will ultimately reach, are interesting problems in psychology. Of one thing I must complain, — that when we of the profession have gradually emancipated ourselves from a routine administration of nauseous mixtures on every possible occasion, and when we are able to say, without fear of dismissal, that a little more exercise, a little less food, and a little less tobacco and alcohol, may possibly meet the indications of the case — I say it is a just cause of complaint that when we, the priests, have

[1] Address by Dr. William Osler, professor of medicine, at the fifteenth anniversary of the Johns Hopkins University, Feb. 23, 1891.

left off the worship of Baal, and have deserted the groves and high places, and have sworn allegiance to the true god of science, that you, the people, should wander off after all manner of idols, and delight more and more in patent medicines, and be more than ever at the hands of advertising quacks. But for a time it must be so. This is yet the childhood of the world, and a supine credulity is still the most charming characteristic of man.

Some of the brightest hopes of humanity are with the medical profession. To it, not to law or theology, belong the promises. Disease will always be with us, but we may look forward confidently to the time when epidemics shall be no more, when typhoid shall be as rare as typhus, and tuberculosis as leprosy. Man, naturally a transgressor daily, both in ignorance and deliberately breaking the laws of health, will always need doctors; but the great group of preventable diseases will disappear. The progress will be gradual. What has been done is but an earnest of the things that shall be done. Amid many disappointments, we must not be impatient, as "science moves but slowly, slowly creeping from point to point."

BAUXITE IN ARKANSAS.[1]

THE Geological Survey of Arkansas has discovered deposits of bauxite in that State, the first considerable ones thus far found in this country. In 1887 a small deposit was discovered in Floyd County, Ga., but that is said to cover "an area of about half an acre" only.[2]

The Arkansas beds occur near the railway in the vicinity of Little Rock, Pulaski County, and near Benton, Saline County. The exposures vary in size from an acre to twenty acres or more, and aggregate something over a square mile. This does not, in all probability, include the total area covered by bauxite in the counties mentioned, for the method of occurrence of the deposits leads to the supposition that there are others as yet undiscovered by the survey.

In thickness the beds vary from a few feet to over 40 feet, with the total thickness undetermined. The average thickness is at least 15 feet.

These Arkansas deposits occur only in tertiary areas and in the neighborhood of eruptive syenites ("granites"), to which they seem to be genetically related. In elevation they occur only at and below 300 feet above tide-level, and most of them lie between 260 and 270 feet above tide. They have soft tertiary beds both above and below them at a few places, and must therefore be of tertiary age. As a rule, however, they have no covering, the overlying beds having been removed by erosion, and are high enough above the drainage of the country to be readily quarried. Erosive action has removed a part of the bauxite in some cases; but there are, in all probability, many places at which it has not yet been even uncovered.

It is pisolitic in structure, and, like all bauxite, varies more or less in color and in chemical composition. At a few places it is so charged with iron, that attempts have been made to mine it for iron ore. Some of the samples from these pits assay over 50 per cent of metallic iron. This ferruginous kind is exceptional, however. From the dark-red varieties it grades through the browns and yellow to pearl-gray, cream-colored, and milky white; the pinks, browns, and grays being the more abundant. Some of the white varieties have the chemical composition of kaolin; while the red, brown, and gray have but little silica and iron, and a high percentage of alumina. The analyses given below show that this bauxite is as good as that of France, Austria, and Ireland, for the manufacture of chemical products, for refractory material, and for the manufacture of aluminum by the Deville process. Should there be a market in this country for such material, Arkansas will be able to supply any demand that may be made for it. No use has ever been made of the Arkansas material except for road-building: indeed, it was not known what it was until January last, when the announcement was made by the State geologist in a letter to the governor.

Partial Analyses of Bauxite from Arkansas.

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.
Alumina	55.59	57.62	58.60	55.89	44.81	62.05	55.64	51.90
Silica	10.13	11.48	3.34	5.11	33.94	2.00	10.38	16.76
Ferric oxide	6.08	1.83	9.11	19.45	1.37	1.66	1.95	3.16
Titanic oxide					2.00	3.50	3.50	3.50
Loss on ignition (water)	28.99	28.63	28.63	17.39	17.28	30.31	27.62	24.86

Average of Fourteen Partial Analyses of Bauxite from France, Austria, and Ireland.[1]

Alumina	52.7 per cent.
Silica	7.1 " "
Ferric oxide	19.1 " "
Water	16.4 " "

The above analyses made by the State Geological Survey show the composition of average samples.

REMOVING TASSELS FROM CORN.

EXPERIMENTS with strawberries made at the Ohio Experiment Station indicate that pollen-bearing is an exhaustive process, and that larger yields of fruit, as a rule, may be expected from those varieties which produce pollen so sparingly that a small proportion of other varieties producing pollen abundantly must be planted with them in order to insure a full crop, than from those which produce sufficient pollen for self-fertilization.

The following very interesting and valuable experiment on corn, made by the experiment station of Cornell University, at Ithaca, N.Y., gives strong support to this theory.

It has been claimed that if the tassels were removed from corn before they have produced pollen, the strength thus saved to the plant would be turned to the ovaries, and a larger amount of grain be produced. To test the effect of this theory, the following trial was made during the past season.

In the general cornfield a plot of forty-eight rows, with forty-two hills in each row, was selected for the experiment. From each alternate row the tassels were removed as soon as they appeared, and before any pollen had fallen. The remaining rows were left undisturbed. The corn was Sibley's Pride of the North, planted the last week in May in hills three feet six inches by three feet eight inches, on dry, gravelly, moderately fertile soil.

On July 21 the earliest tassels began to make their appearance in the folds of the upper leaves, and were removed as soon as they could be seen, and before they were fully developed. A slight pull was sufficient to break the stalk just below the tassel, and the removal was easy and rapid.

On July 25 the plot was gone over again for the removal of such tassels as had appeared since the previous work, and at this time by far the greater number of the tassels were removed.

On July 28, when the plot was gone over the third time, the effects of the tasselling became apparent in the increased number of silks that were visible on the rows from which the tassels had been removed.

On the 1,008 tasselled hills there were visible 591 silks; on the 1,008 untasselled, 393 silks.

On Aug. 4 the plot was gone over for the last time, but only a few tassels were found on the very latest stalks. The preponderance of visible silk on the tasselled rows was still manifest, there being at this time 3,542 silks visible on the tasselled rows, and but 2,044 on the untasselled rows. The corn was allowed to stand without cutting until ripe.

[1] By John C. Branner, Ph.D., State geologist of Arkansas (American Geologist, March, 1891).

[2] Transactions of the American Institute of Mechanical Engineers, xvi. p. 905.

[1] From analyses principally by Saint-Claire Deville given in the Ann. de Chimie et de Physique, lxi. 1861, p. 309 et seq.; Bull. Soc. Geol. de France, xvi. 1888, p. 345; Dingler's Polytechnisches Journal, 198, p. 156, and 234, p. 465; Bischof's Feuerfesten Thone, p. 194; Percy's Metallurgy, p. 133.